

# FEDERAL UTILITY PARTNERSHIP WORKING GROUP SEMINAR

April 22-23, 2015  
Nashville, TN

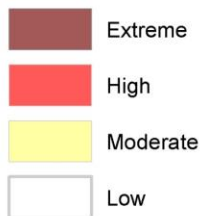
## Leveraging UESCs for Innovative Water Projects

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**“One third of all counties in the US will face high risk of water shortages by the middle of century.”**

**Water Supply Sustainability  
Index (2050)**



Based on a map in the report prepared by  
Tetra Tech Inc. (2010) "Evaluating Sustainability of Projected  
Water Demands under Future Climate Change Scenarios"



# New Executive Order 13693 Water Requirements

Reduce potable water use intensity 36% by FY25 from FY07 baseline

Reduce industrial, landscaping, and agricultural (ILA) water use 30% by FY25 from FY10 baseline

Install water meters

Develop water balance to improve water conservation

Build and renovate net zero water buildings

Install WaterSense products

# Steps to Leverage Utility Energy Service Contracts (UESCs) for

## 1. Screen

- What is the potential for water efficiency?

## 2. Require Expertise

- Is the contractor qualified?

## 3. Conduct a Water Balance

- What are the primary water uses?

## 4. Specify Technologies

- Are you choosing the right technologies?

# 1. Screen for Project Potential

## Upcoming FEMP Screening Tool



### Water Project Screening Tool

#### Site Level Data

1. What is the total facility square footage?

2. Are the majority of your buildings older than 1994? (Y/N)

3. What is the estimated percent of each building type by floor area?

*100% remaining*

Office

Hospital/healthcare

Barracks

Prison

Laboratory

Dining/commercial kitchen

Gym/pool

Other

4. Does the site operate and maintain the water distribution system? (Y/N)

Next

# Screening Tool Output

**High water savings potential**

**Marginal water savings potential**

**Low water savings potential**

Plumbing

Irrigation

Cooling tower

Steam systems

Single pass cooling

Vehicle wash

Laboratory and medical

Dining equipment

Distribution systems

# Screening Tool Output

**High cost savings  
potential**

**Marginal cost savings  
potential**

**Low cost savings  
potential**

Indoor water measures

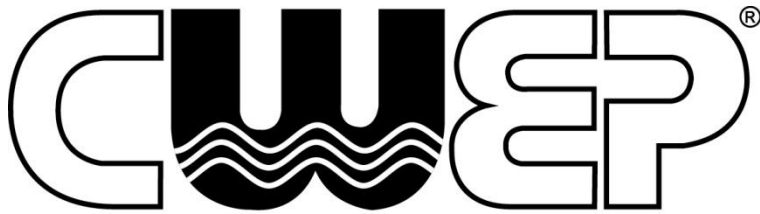
Landscape irrigation  
measures

## 2. Require Expertise

### Certified Water Efficiency Professional (CWEP)

<http://www.aeecenter.org/i4a/pages/index.cfm?pageID=4454>

- Sister program to the Certified Energy Manager (CEM) program
- Facility focus
- Comprehensive 2 day training with exam
- Initiated in March 2015



Certified Water Efficiency Professional

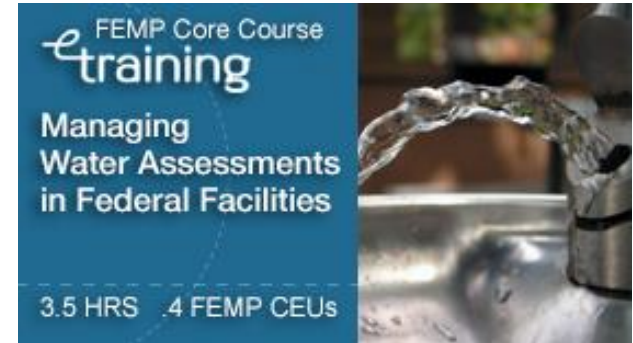




# FEMP Water Training

## Managing Water Assessments

<https://www4.eere.energy.gov/femp/training/training/managing-water-assessment-federal-facilities>



## Best Practices for Comprehensive Water Management

<https://www4.eere.energy.gov/femp/training/training/best-practices-comprehensive-water-management-federal-facilities>

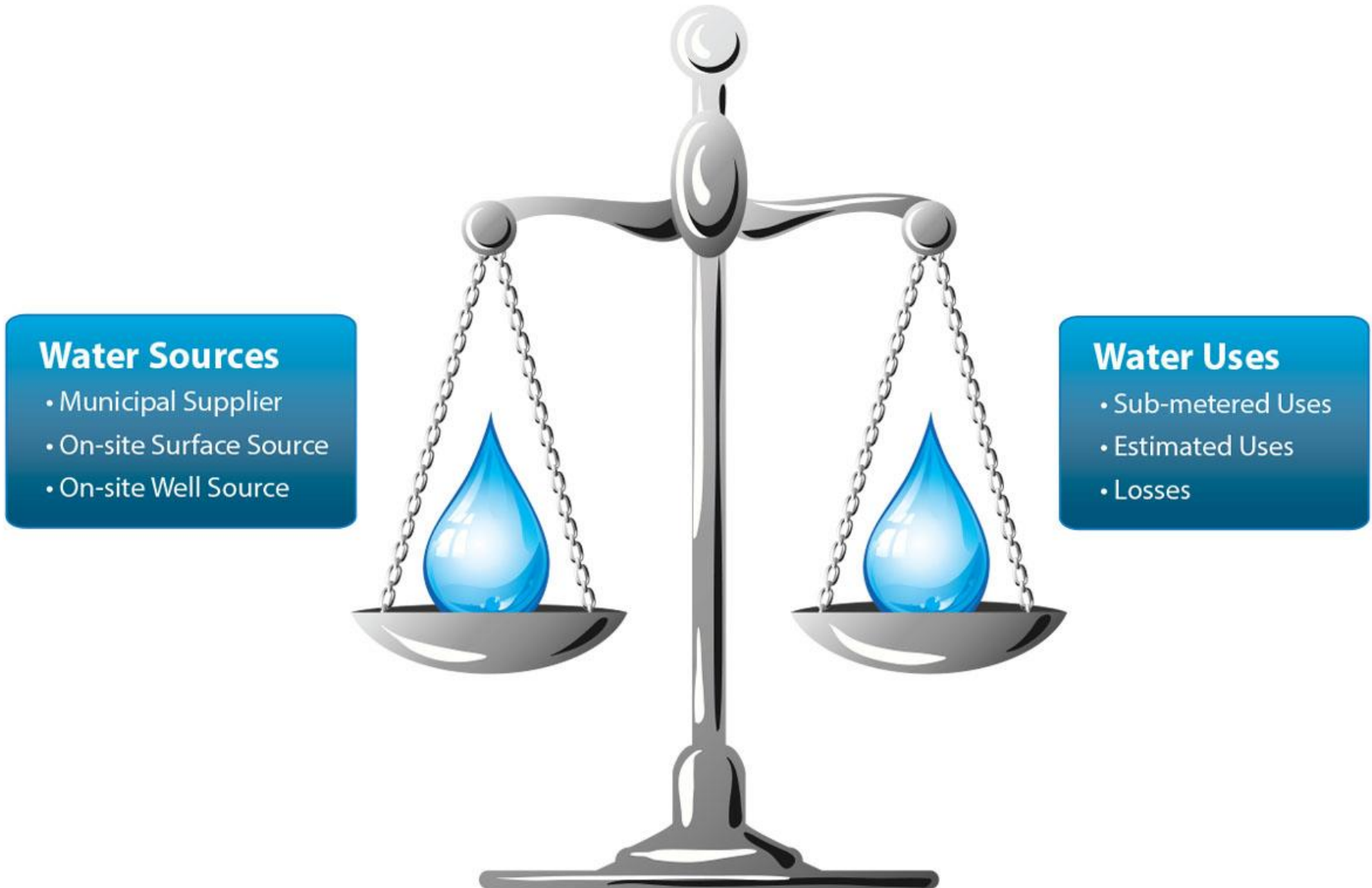


**\*\* Free**

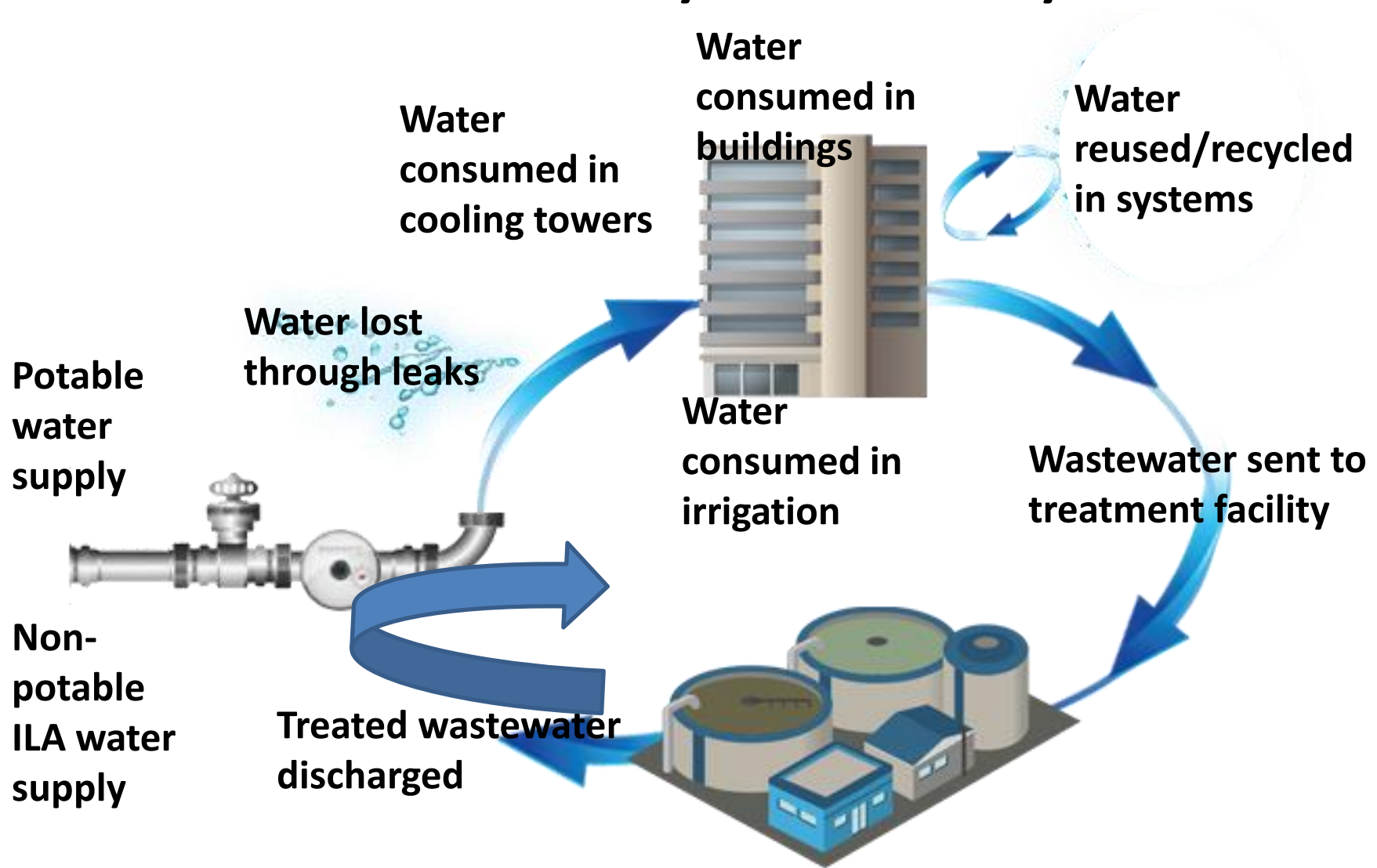
**\*\* Self-paced**

**\*\* CEU credits**

# 3. Require a Water Balance



# The Facility Water Cycle

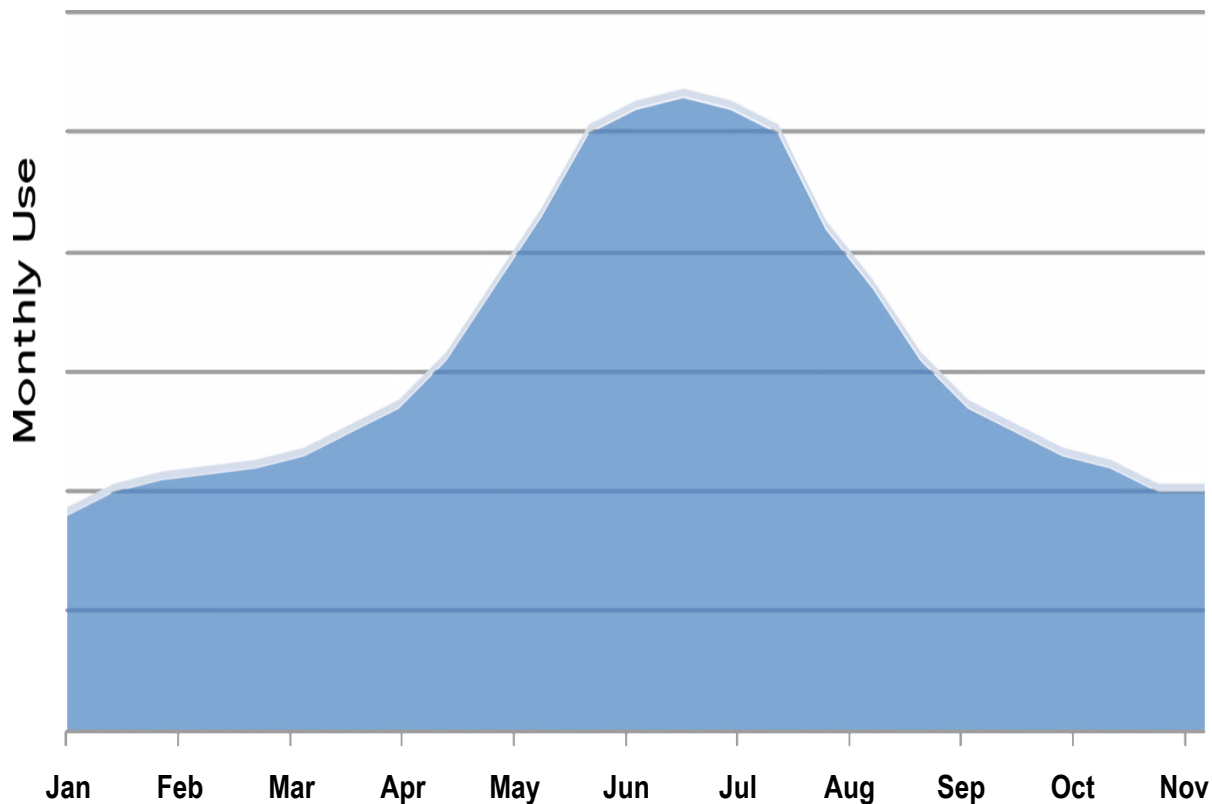


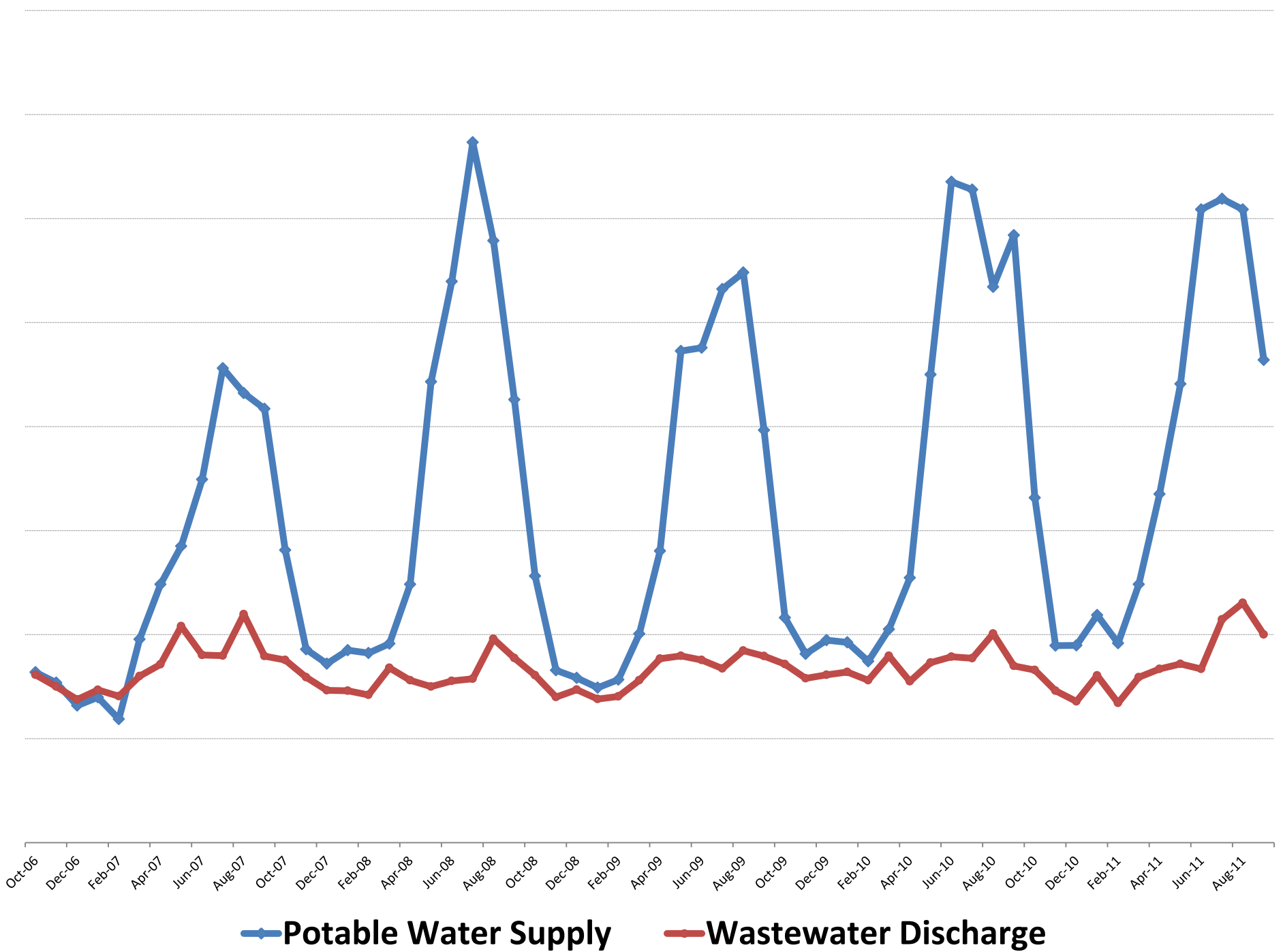
# Estimating Water Supply

- **Identify** all water sources: purchased water, on-site produced water
- **Collect** monthly metered data from all sources
- **Quantify** water obtained from each source
- **Separate** potable and non-potable sources

# Measure Total Water Supply

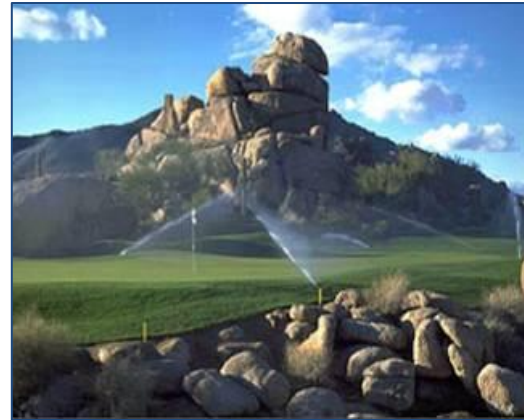
**Annual  
Total  
Supply  
Curve**





# Quantify Sub-Metered Uses

- Buildings
- Irrigation
- Cooling towers
- Processes

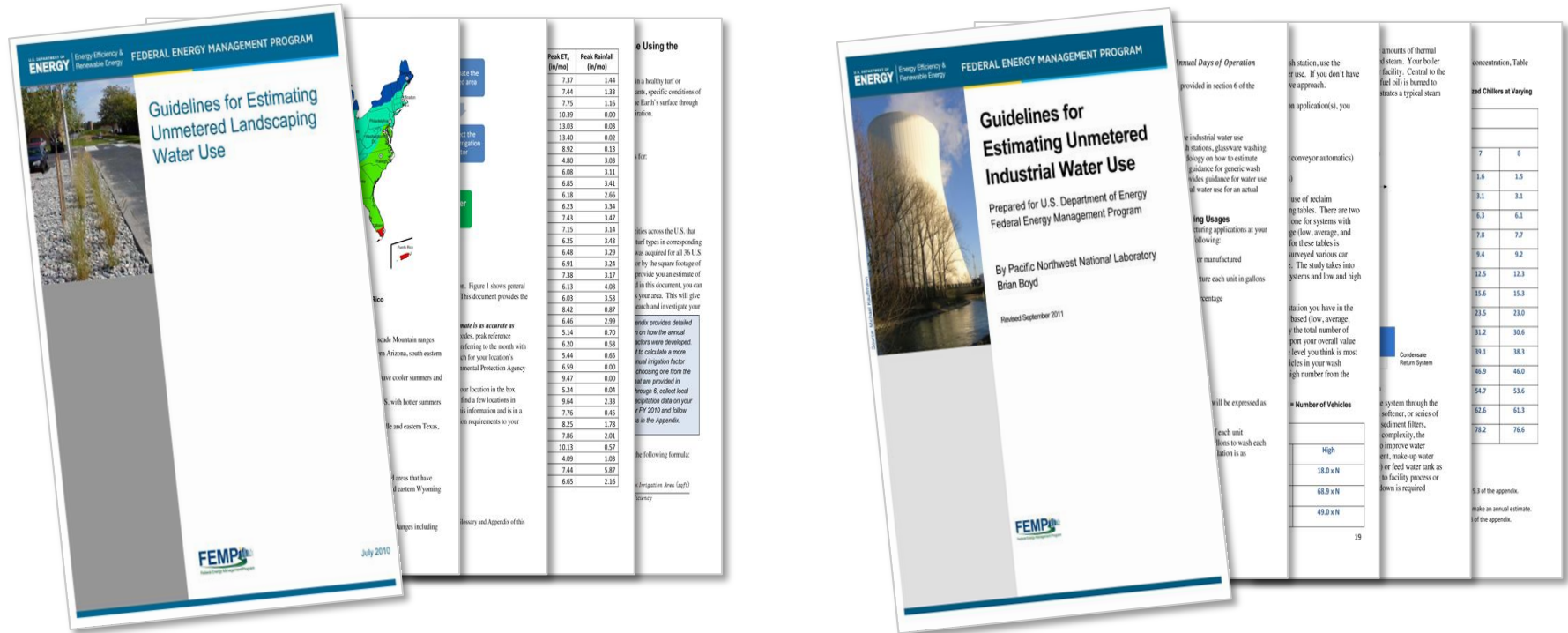


# Estimate Unmetered End-Uses

- Perform a walk-through survey to identify water consuming equipment
- Collect data on frequency of use and flow rates to estimate annual water use
- Common unmetered end-uses
  - Plumbing
  - Commercial kitchen
  - Irrigation
  - Vehicle wash
  - Laboratory and medical equipment
  - Fire hydrant flushing



# Resources for Estimating End-Uses



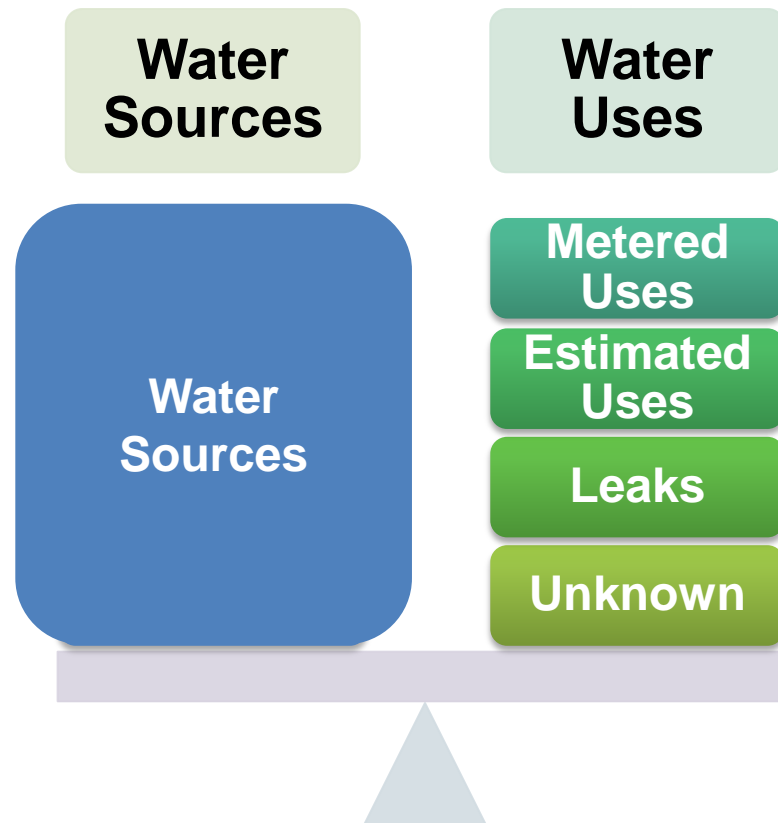
Find FEMP documents at:

<http://energy.gov/eere/femp/guidance-meeting-executive-order-13514-water-goals>

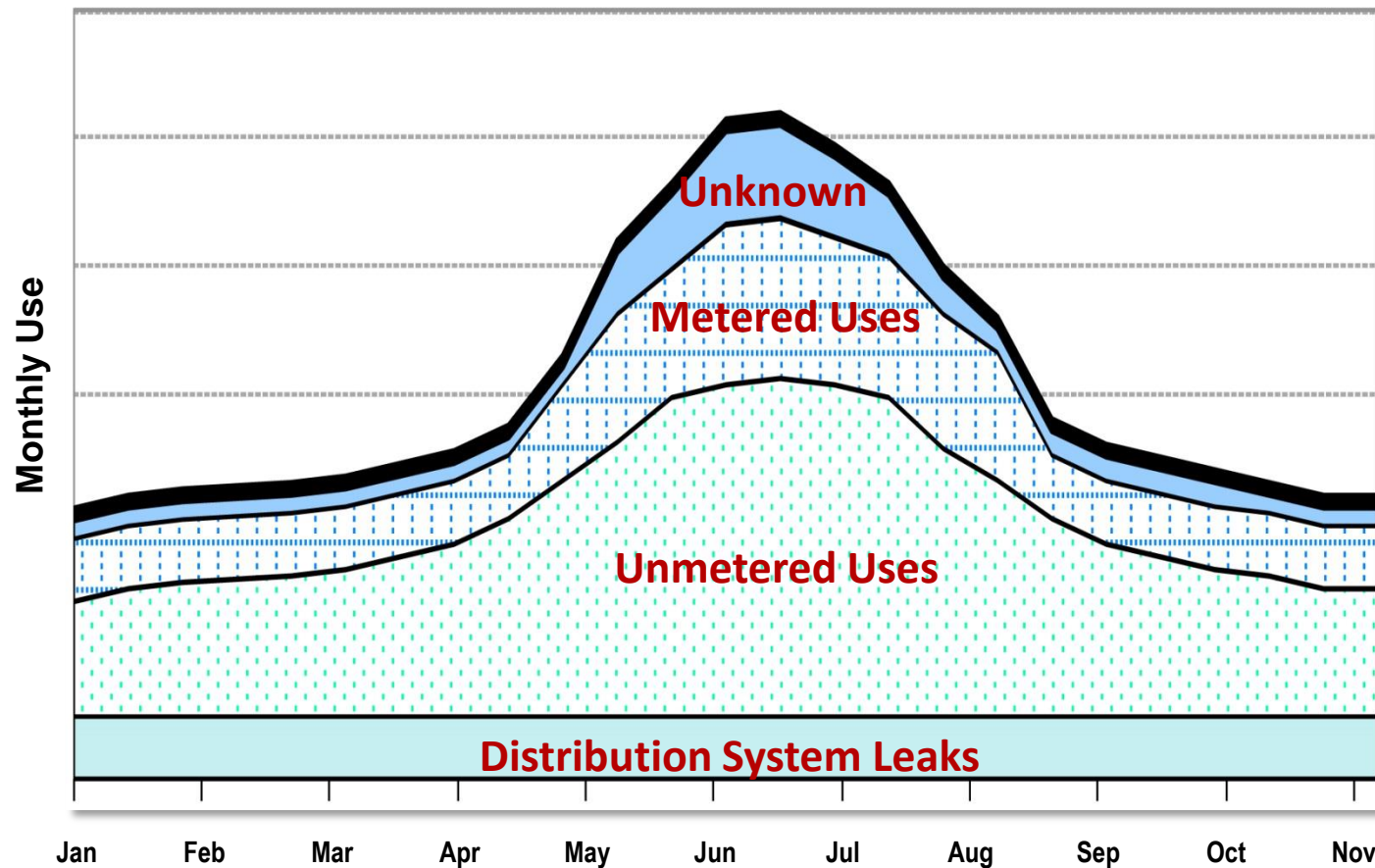
# Compare Supply to Use

**Total Water Supply  $\geq \sum$  Water Uses**

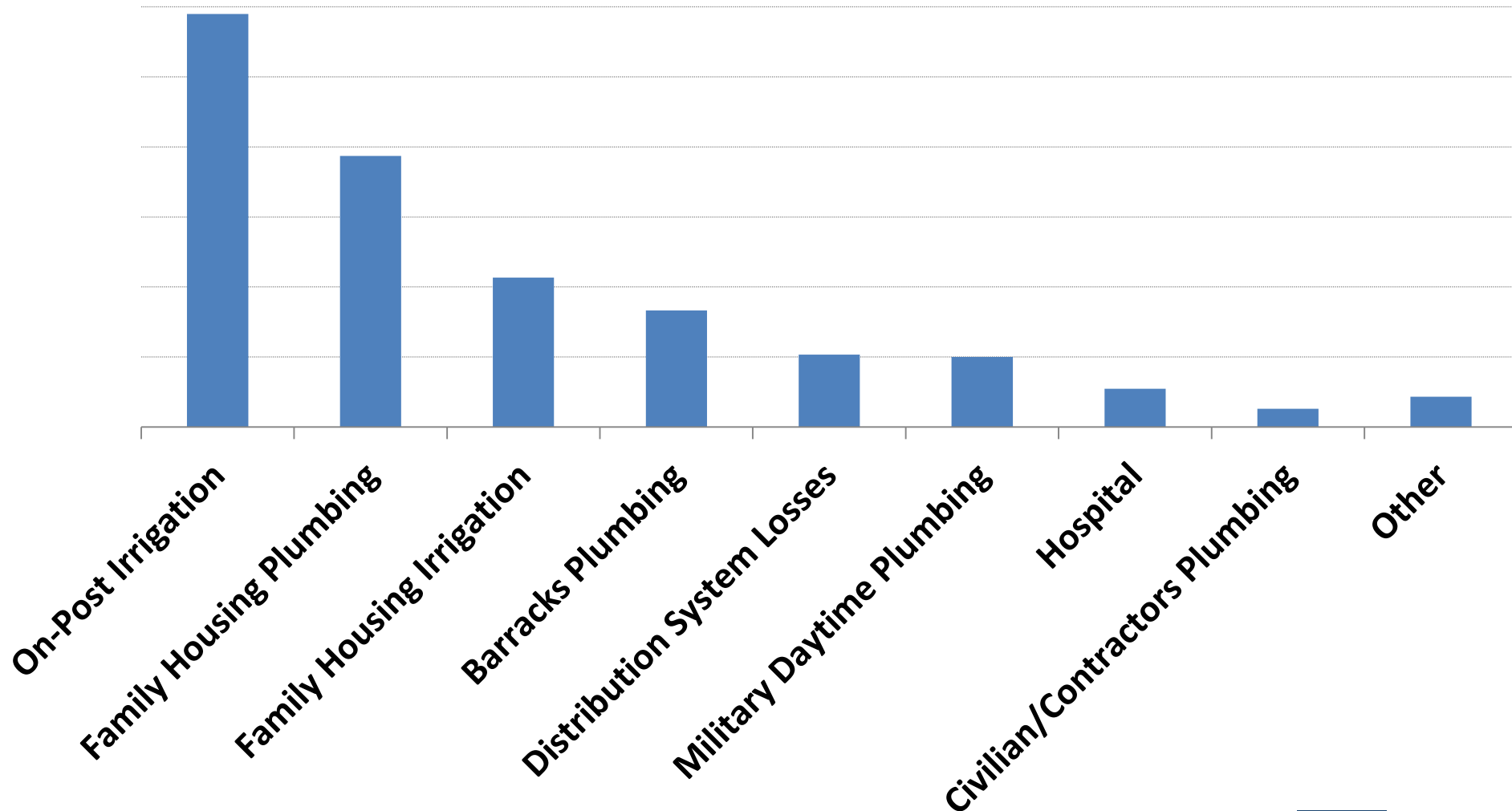
**Difference is “unknown”**

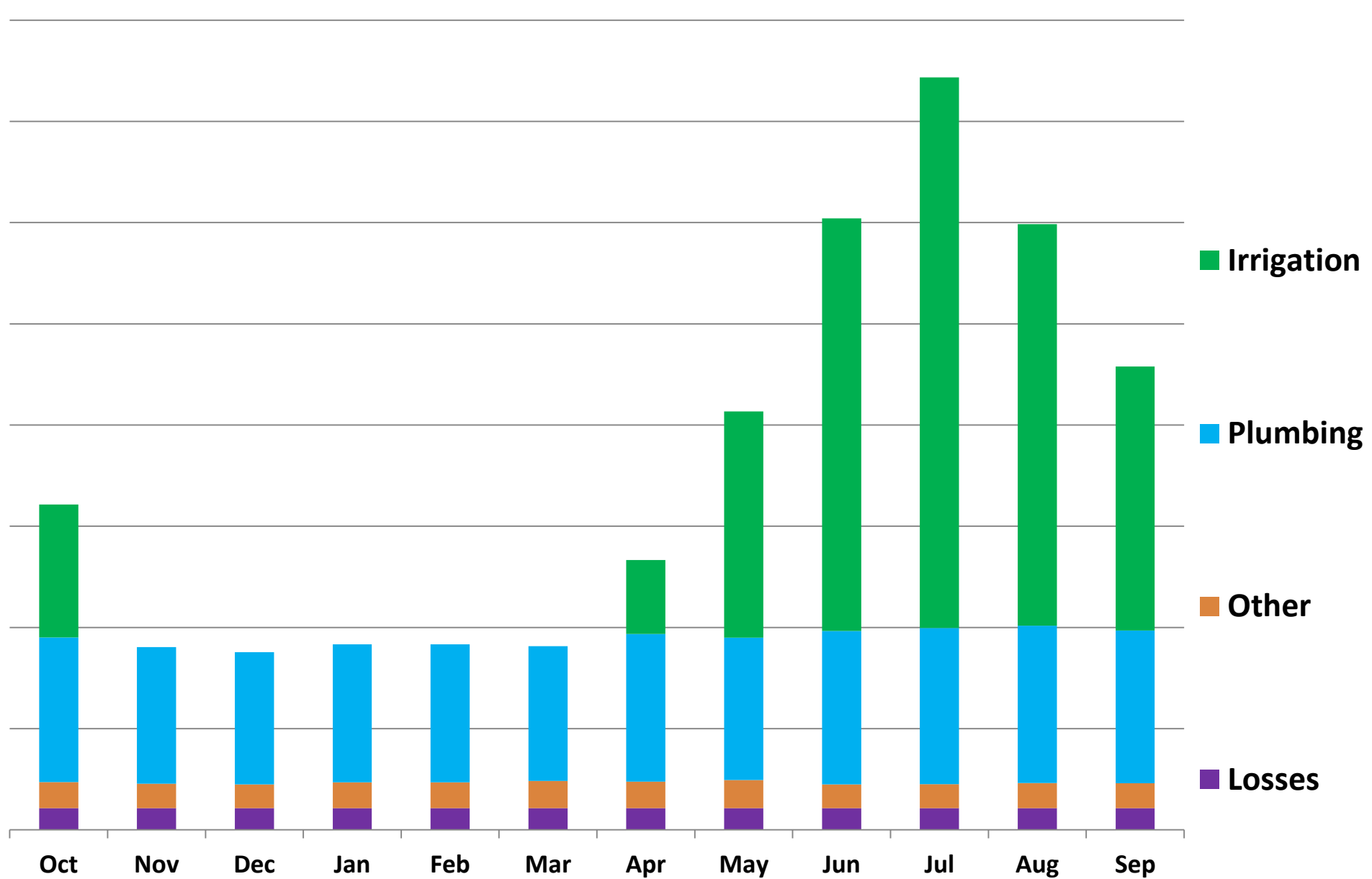


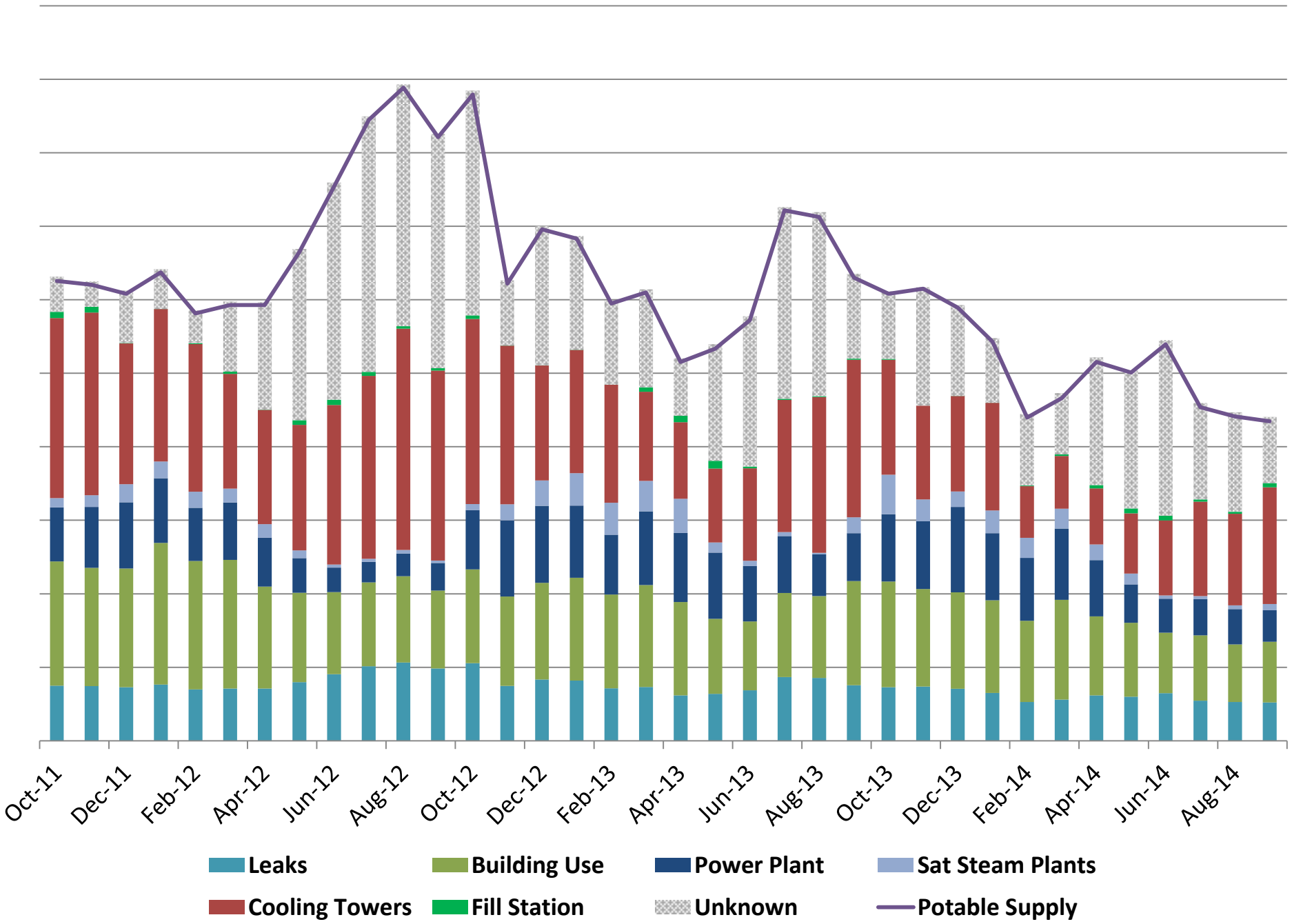
# Create a Distribution Curve



# Create an End-Use Breakout







# 4. Specify Technologies

## FEMP Water Efficiency Best Management Practices

1

- Water Management Planning

2

- Information and Education

3

- Leak Detection

4

- Water-Efficient Landscape

5

- Water-Efficient Irrigation

6

- Toilets & Urinals

7

- Faucets & Showerheads

8

- Boiler/Steam Systems

9

- Single Pass Cooling

10

- Cooling Towers

11

- Commercial Kitchens

12

- Lab/Medical Equipment

13

- Other Intensive Equip.

14

- Alternate Water Sources

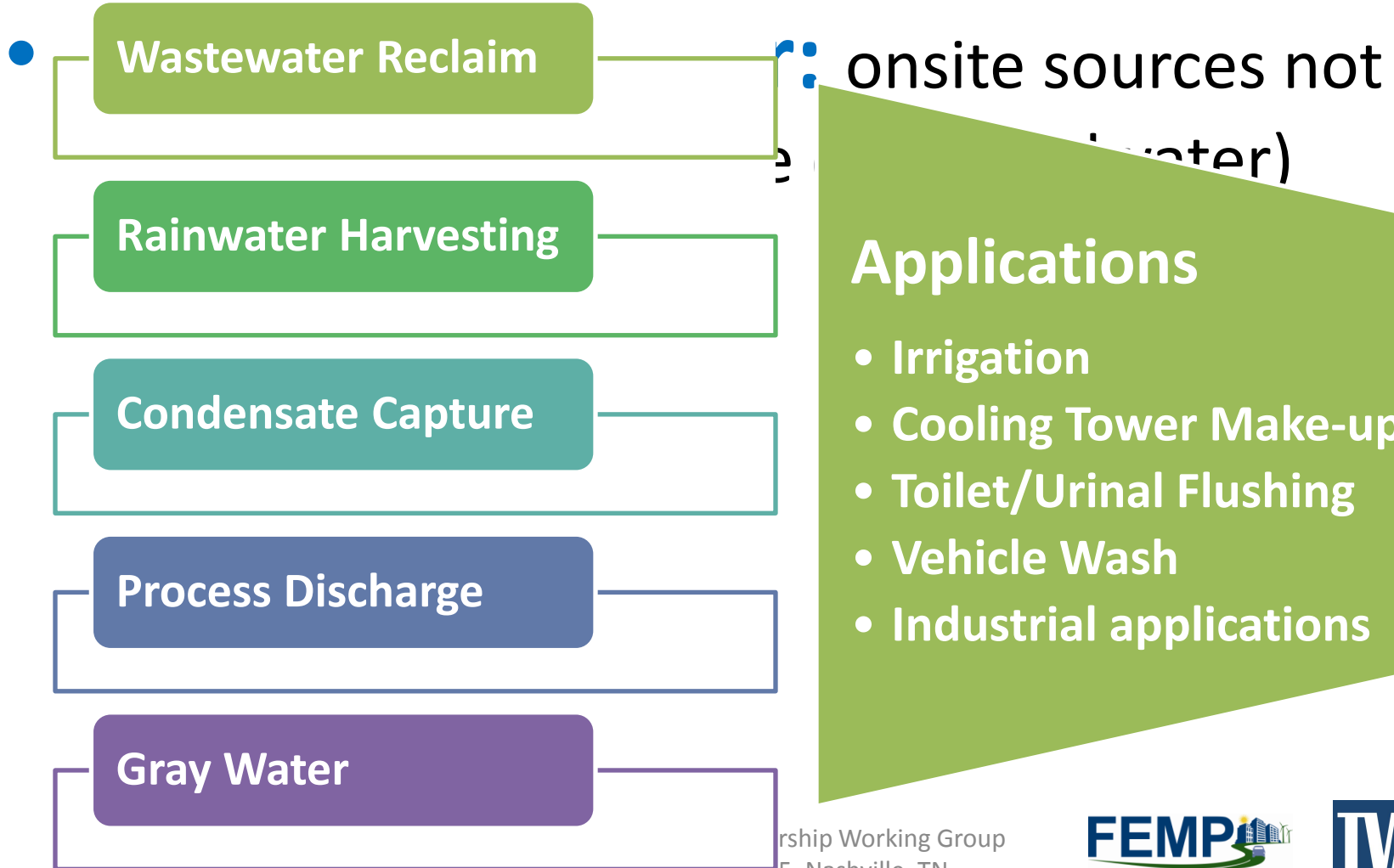
Website: <http://energy.gov/eere/femp/best-management-practices-water-efficiency>

# Underutilized Water-Efficient Technologies

- Advanced cooling tower controls
- Advanced weather-based irrigation controls
- High efficiency irrigation nozzles
- Irrigation sprinkler shutoff device
- Steam sterilizer retrofit kit
- Acoustic leak detection sensors
- Air handling condensate capture and reuse

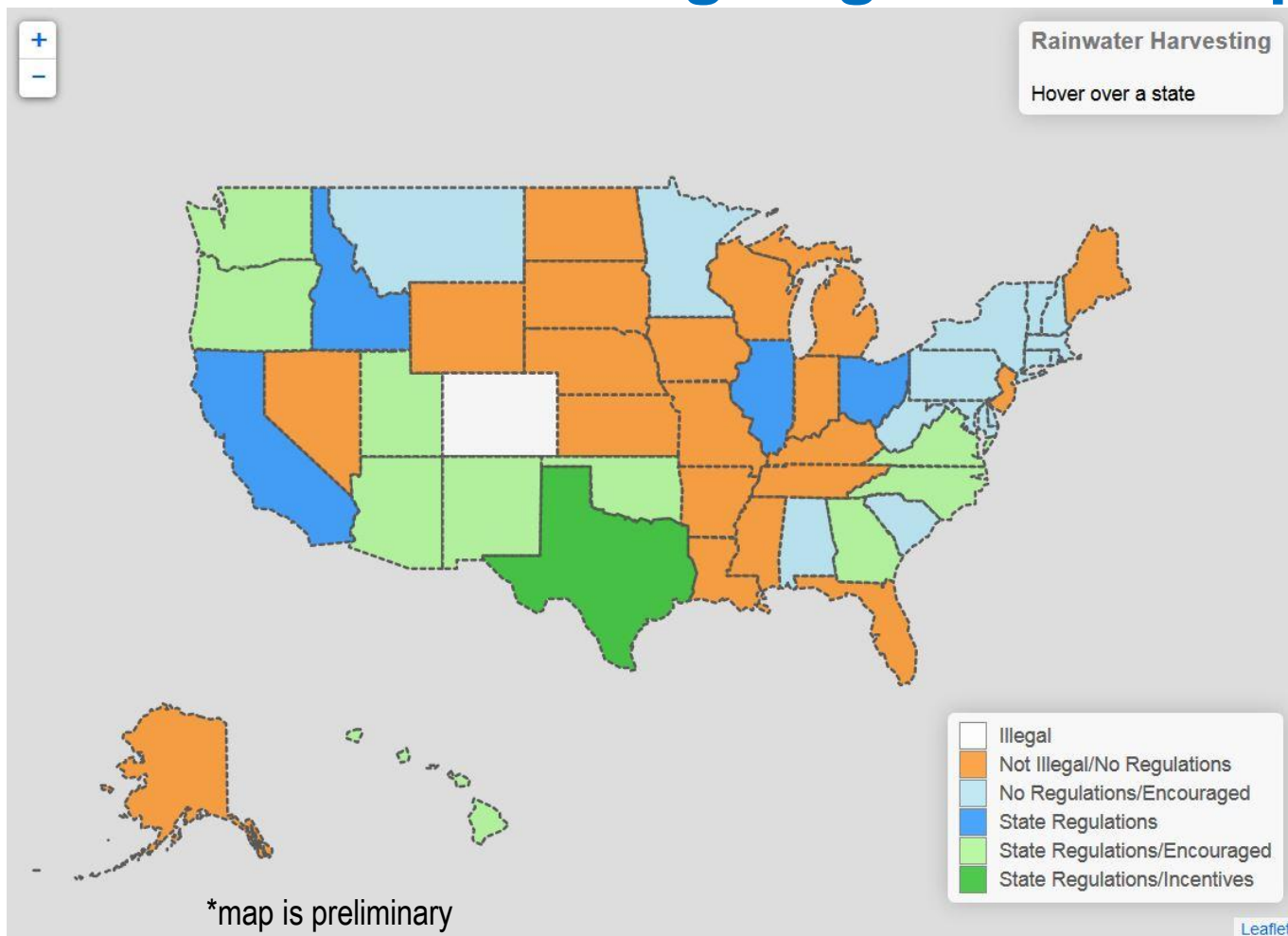


# What is the next big idea?



# Upcoming FEMP Product

## Rainwater Harvesting Regulations Map\*



# Questions

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